Volunteer Lake Assessment Program Individual Lake Reports

SUNCOOK POND, LOWER, BARNSTEAD, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	35,071	**Max. Depth (m):**	4.9	**Flushing Rate (yr^{-1}):**	22.2
Surface Area (Ac.):	245	**Mean Depth (m):**	2.9	**P Retention Coef:**	0.31
Shore Length (m):	5,800	**Volume (m^3):**	2,916,500	**Elevation (ft):**	551

TROPHIC CLASSIFICATION

Year	Trophic class
1979	MESOTROPHIC
1992	OLIGOTROPHIC

KNOWN EXOTIC SPECIES

Variable Milfoil

The Waterbody Report Card tables are generated from the DRAFT 2014 305(b) report on the status of N.H. waters, and are based on data collected from 2004-2013. Detailed waterbody assessment and report card information can be found at www.des.nh.gov/organizations/divisions/water/wmb/swqa/index.htm

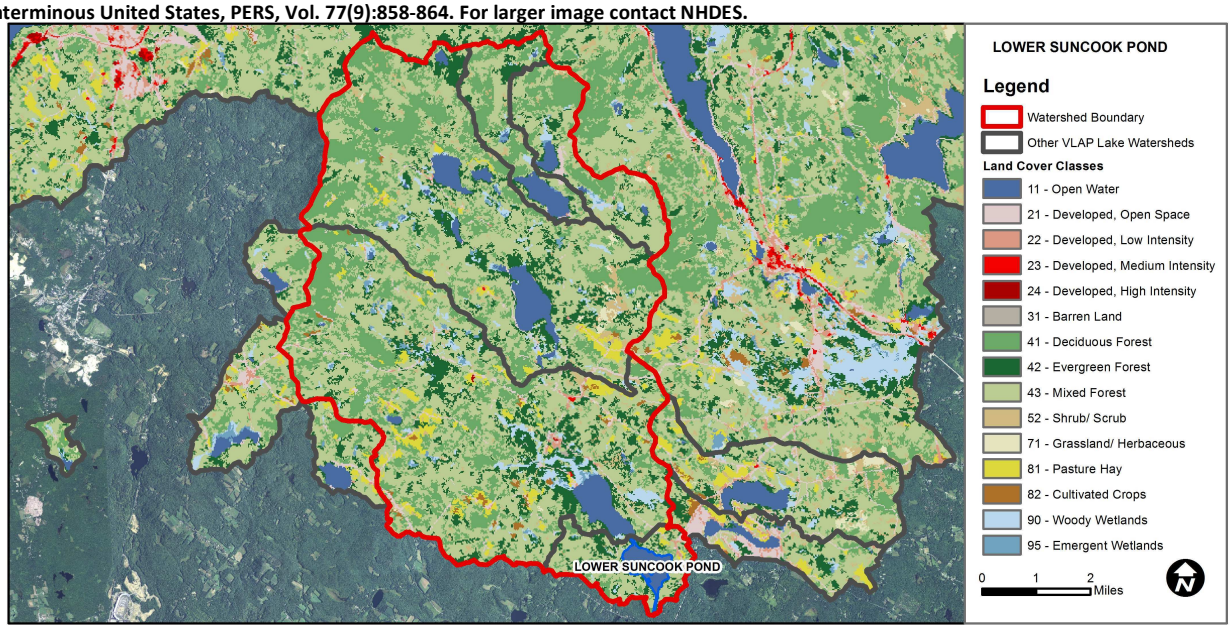
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Cautionary	The calculated median is fewer than 5 samples but > indicator and the chlorophyll a indicator is okay. More data needed.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	Oxygen, Dissolved	Encouraging	There are < 10 samples with 0 exceedances of criteria. More data needed.
	Dissolved oxygen satura	Slightly Bad	There are >10% of samples (minimum of 2), exceeding criteria.
	Chlorophyll-a	Good	The calculated median is from 5 or more samples and is < indicator and > 1/2 indicator.
Primary Contact Recreation	Escherichia coli	Very Good	Where there are no geometric means, all bacteria samples are < 75% of the geometric mean. Where there are geometric means all single bacteria samples are < the SSMC and all geometric means are < geometric mean criteria.
	Chlorophyll-a	Very Good	There are a total of at least 10 samples with 0 exceedances of indicator.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

UPPER SUNCOOK LAKE - TOWN BEACH	Escherichia coli	Good	There are geometric means and all geometric means are < geometric mean criteria; and there has been a single sample exceedance.
UPPER SUNCOOK LAKE - CAMP FATIMA BEACH	Escherichia coli	Slightly Bad	There are >=1 exceedance(s) of the geometric mean and/or >=2 single sample criterion exceedances. Exceedances are <2X criteria.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	5.17	Barren Land	0.06	Grassland/Herbaceous	0.37
Developed-Open Space	1.9	Deciduous Forest	24.31	Pasture Hay	2.86
Developed-Low Intensity	0.3	Evergreen Forest	13.22	Cultivated Crops	0.45
Developed-Medium Intensity	0.02	Mixed Forest	45.37	Woody Wetlands	2.83
Developed-High Intensity	0.01	Shrub-Scrub	2.44	Emergent Wetlands	0.67

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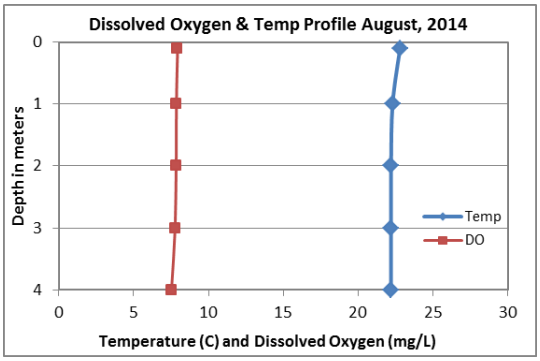
Lower Suncook Pond, Barnstead

2014 Data Summary

Observations and Recommendations (*Refer to Table 1 and Historical Deep Spot Data Graphics)*

- **Chlorophyll-a:** Chlorophyll levels decreased from 2013, were low and less than the state median. Historical trend analysis indicates stable chlorophyll levels since monitoring began.
- **Conductivity/Chloride:** Epilimnetic (upper water layer) and Outlet conductivity levels were average and approximately equal to the state median. Narrows Rd. Inlet conductivity levels were low. Historical trend analysis indicates relatively stable epilimnetic conductivity since 2003.
- **Total Phosphorus:** Epilimnetic and tributary total phosphorus levels were within a low to average range. Epilimnetic phosphorus levels decreased from 2013 and were less than the state median. Historical trend analysis indicates stable epilimnetic phosphorus since 2003; however trend analysis since 1987 indicates significantly decreasing (improving) epilimnetic phosphorus levels. We hope to see this continue!
- **Transparency:** Transparency improved slightly from 2013 and was approximately equal to the state median. Historical trend analysis indicates highly variable transparency since 2003.
- **Turbidity:** Epilimnetic and tributary turbidity levels were relatively low.
- **pH:** Epilimnetic pH levels were within the desirable range 6.5—8.0 units however historically have been less than desirable. Historical trend analysis indicates relatively stable epilimnetic pH since 2003.
- **Recommended Actions:** Increase monitoring frequency to three times per summer, typically June, July and August to decrease variability in monitoring data and better assess historical and seasonal water quality trends. Overall, water quality in 2014 was average, however the increased frequency and intensity of storm events highlights the importance of managing stormwater runoff in the watershed. Educate lake and watershed residents on ways to reduce stormwater runoff from their properties. DES' "NH Homeowner's Guide to Stormwater Management" is a great resource.



Station Name	Table 1. 2014 Average Water Quality Data for LOWER SUNCOOK POND								
	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Cond. uS/cm	Total P ug/l	Trans. m		Turb. ntu	pH
						NVS	VS		
Epilimnion	7.1	2.86	7	48.2	8	3.28	3.30	1.20	6.67
Narrows Rd Inlet			3	21.7	12			0.63	6.29
Outlet				49.0	8			0.82	6.70

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: > 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: between 6.5-8.0 (unless naturally occurring)

Historical Water Quality Trend Analysis

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	Stable	Trend not significant; data moderately variable.	Chlorophyll-a	Stable	Trend not significant; data show low variability.
pH (epilimnion)	Stable	Trend not significant; data moderately variable.	Transparency	Stable	Trend not significant; data highly variable.
			Phosphorus (epilimnion)	Stable	Trend not significant; data show low variability.